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Michigan Educational Assessment Program

**Grade 8
Science Assessment**

Winter 2005

Released Items

MICHIGAN STATE BOARD OF EDUCATION
STATEMENT OF ASSURANCE OF COMPLIANCE WITH FEDERAL LAW

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DIRECTIONS

In this test you will demonstrate your understanding of science.

This test includes both multiple-choice and written-response questions. For the multiple-choice questions, use only a No. 2 pencil to mark your answers. Make a dark mark that completely fills the corresponding circle in your **Answer Folder**. If you are not sure of the answer to a multiple-choice question, mark your *best* choice and go on to the next question. If you change an answer, be sure to erase the first mark completely. Remember, mark only one answer for each question.







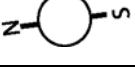


Mixed in with the multiple-choice items are written-response questions. These questions require you to write sentences or paragraphs in your **Answer Folder**. Try to show all that you know about the topics by writing as much as you can in response to the questions you are asked. Make sure you at least attempt to answer each question. Record your written responses in the **Answer Folder** on the lines or spaces provided. Make sure the number of the question corresponds to the number in the **Answer Folder**.

If you do not understand any of these directions, please raise your hand.

You may now begin.

Use the information below to answer questions 7 through 10.

Planetary Data

| Planet | Period of Revolution/Orbit (days) | Period of Rotation (hours) | Main Gases | Distance from Sun (millions of km) | Tilt of Axis | Diagram (not to scale) |
|---------|-----------------------------------|----------------------------|---------------------------|------------------------------------|--------------|---|
| Mercury | 88 | 1,416 | virtually none | 57.9 | 0° |  |
| Venus | 224.7 | 5,832 | carbon dioxide | 108.2 | 177.2° |  |
| Earth | 365.3 | 24 | nitrogen & oxygen | 149.6 | 23.27° |  |
| Mars | 687 | 24½ | carbon dioxide | 227.9 | 25.12° |  |
| Jupiter | 4,307 | 10 | hydrogen & helium | 778.3 | 3.5° |  |
| Saturn | 10,753 | 10¾ | hydrogen & helium | 1,427 | 26.4° |  |
| Uranus | 30,660 | 17 | hydrogen, helium, methane | 2,871 | 97.55° |  |
| Neptune | 60,225 | 16 | hydrogen, helium, methane | 4,497 | 28.48° |  |
| Pluto | 90,520 | 153¼ | methane | 5,914 | 120° |  |

The sun, Earth, and eight other planets make up our solar system. Other objects that travel around our sun are also included as a part of our solar system. Astronomers have studied the objects in the solar system for thousands of years, but only recently have they been able to study the planets in detail. The chart above shows many of the features and characteristics of the planets in our solar system.

- 7 According to the chart, Earth makes one full rotation on its axis approximately every 24 hours. Suppose Earth's period of rotation increased to 28 hours. Which of the following changes would occur?
- A There would be fewer days in a week.
 - B The length of daylight and nighttime would increase.
 - C Earth's distance from the sun would decrease.
 - D It would take Earth longer to revolve around the sun.
- 8 Current scientific evidence indicates that there is no liquid water on Mars, but there is frozen water. This is due to the fact that temperatures on Mars, even during the summer, are well below 0°C (32°F). Which of the following changes would *most likely* allow for an increase in temperature and the presence of liquid water on Mars?
- A a decrease in the tilt of Mars' axis
 - B an increase in Mars' period of rotation
 - C an increase in Mars' period of revolution
 - D a decrease in Mars' distance from the sun
- 9 Astronomers believe that there are about 100,000 comets that travel through our solar system. Comets are chunks of ice, dust, and gas that orbit around our sun. Which of the following can be observed from Earth as comets get closer to the sun?
- A They explode.
 - B Their gases burn.
 - C Their tails get longer.
 - D They begin to slow down.

ANSWER THE FOLLOWING CONSTRUCTED-RESPONSE ITEM IN YOUR ANSWER FOLDER.

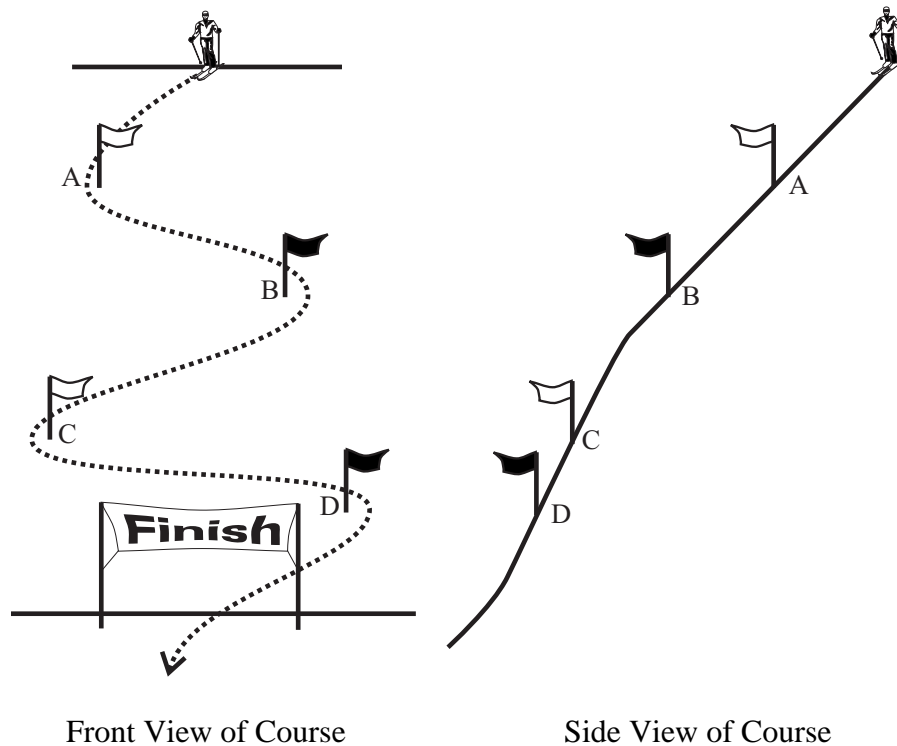
10 Constructed-Response
(3 points)

Using information from the chart:

- Identify two ways in which Jupiter and Saturn are *most similar*.
- Explain why Saturn's period of revolution around the sun is more than twice that of Jupiter.

NOTHING WRITTEN IN THIS TEST BOOKLET WILL BE SCORED.

Use the information below to answer questions 34 through 37.



Emmett has entered a ski competition held on Big Powderhorn Mountain. He must ski around four markers and cross a finish line at the bottom of the slope. He hopes to beat the record time on this course of 1 minute and 13 seconds (1:13).

- 34 Which of the following changes will happen as Emmett rounds marker A?
- A Only his speed will change.
 - B Only his direction will change.
 - C His speed and direction will change.
 - D He will maintain a constant speed and direction.

- 35 Emmett asks the manager at the ski resort about the length of the course. Which of the following units is *most* appropriate to use in reporting the length of the course?
- A liters
- B grams
- C meters
- D centimeters
- 36 Suppose it is snowing on Big Powderhorn Mountain. Which of the following conditions is necessary in order for the falling snow to accumulate on the ski slope?
- A low relative humidity
- B increasing air pressure
- C fog formation at ground level
- D ground temperature below 0°C

ANSWER THE FOLLOWING CONSTRUCTED-RESPONSE ITEM IN YOUR ANSWER FOLDER.

- 37 **Constructed-Response** The table below gives some information about the skiers and their
(3 points) finishing times.

Skier Statistics and Finishing Times

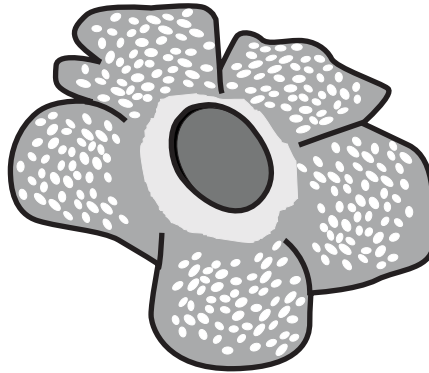
| Skier | Mass (kg) | Age (years) | Height (cm) | Finishing Time (min/sec) |
|----------|--------------|----------------|----------------|-----------------------------|
| Emmett | 69 | 17 | 170 | 1:15 |
| Miguel | 67 | 15 | 162 | 1:12 |
| Brent | 71 | 15 | 175 | 1:17 |
| Heinrich | 68 | 14 | 165 | 1:13 |

Using information from the table:

- Identify the skier that broke the course record for time.
- Identify the factor listed in the table that is *least likely* to have affected the skiers' finishing times. Explain your reasoning.

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Use the information below to answer questions 42 through 45.



The *Rafflesia* is a large flowering plant that grows only in the jungles of Indonesia. They have no roots, leaves, or stems and cannot produce their own food. *Rafflesia* feed off the roots and vines of a host plant called *Tetrastigma*. Only the buds, flowers, and berries of the *Rafflesia* protrude from the body of the host plant. The *Rafflesia* depends on the *Tetrastigma* for survival. The *Rafflesia* emits an odor that smells like rotting meat. This odor attracts insects such as flies and beetles to the flower to pollinate it. The full-grown flower grows up to a meter across and lasts only about a week before it dies.

- 42 Based on its feeding habits, the *Rafflesia* is *best* classified as a
- A parasite.
 - B predator.
 - C pioneer species.
 - D non-native species.

- 43 The full-grown *Rafflesia* flower lasts for about one week before it dies. Which of the following must happen during that week in order for the *Rafflesia* to reproduce?
- A The host plant must die.
 - B The host plant must reproduce.
 - C The *Rafflesia* flower must be pollinated.
 - D The *Rafflesia* flower must be exposed to full sun.
- 44 Because the *Rafflesia* plant has no leaves or stems, it is **NOT** able to perform which of the following functions?
- A fertilization
 - B germination
 - C reproduction
 - D photosynthesis

ANSWER THE FOLLOWING CONSTRUCTED-RESPONSE ITEM IN YOUR ANSWER FOLDER.

- 45 **Constructed-Response**
(3 points)
- Forests in Indonesia are currently being cleared for the purpose of growing cinnamon. Because the price of cinnamon is so high, government officials are permitting small cinnamon plantations within the national parks.
- How will the loss of forests affect the *Rafflesia* population?
 - Describe two consequences of farm development on Indonesia's forests and national parks.

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Grade 8 Key

| Item # | Key | Benchmark |
|--------|-----|-----------|
| 7 | B | V.4.m.2 |
| 8 | D | V.4.m.2 |
| 9 | C | V.4.m.3 |
| 10 | CR | I.1.m.5 |
| 34 | C | IV.3.m.1 |
| 35 | C | I.1.m.4 |
| 36 | D | V.3.m.3 |
| 37 | C-R | I.1.m.5 |
| 42 | A | III.5.m.1 |
| 43 | C | III.2.m.2 |
| 44 | D | III.2.m.3 |
| 45 | C-R | II.1.m.5 |



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